

Name: _____

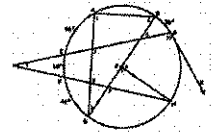
Date: _____

Per.: _____

Station 1 - Concept

Trigonometry:

Circles:



Station 2 – Trigonometry Problem Solving

**** COMPLETE ON A SEPARATE SHEET OF PAPER***

Example 1 - Find to the nearest degree the measure of the angle of elevation of the sun when a vertical pole 6.5 meters high casts a shadow 8.3 meters long.

Example 2 - From the top of a lighthouse 165 feet above sea level, the measure of the angle of depression of a boat at sea is 35° . Find to the nearest foot the distance from the boat to the foot of the lighthouse.

Station 2 - Continued

Example 3 - At a point on the ground 39 meters from the foot of a tree, the measure of the angle of elevation of the top of the tree is 42° . Find the height of the tree to the nearest meter.

Example 4: From the top of a school 61 feet high, the measure of the angle of depression to the road in front of the school is 38° . Find to the nearest foot the distance from the road to the school.

5)

A ladder is leaning against a wall. The foot of the ladder is 6.25 feet from the wall. The ladder makes an angle of 74.5° with the level ground. How high on the wall does the ladder reach? Round the answer to the *nearest tenth of a foot*.

6)

Find to the *nearest degree* the measure of the angle of elevation of the sun when a woman 150 centimeters tall casts a shadow 43 centimeters long.

7)

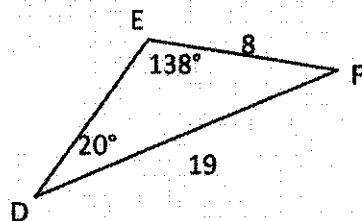
3. A person in a balloon which is 2,000 feet above the airport finds that the angle of depression to a ship out at sea is 21° . Find the horizontal distance between the balloon and the ship. (or the distance from the airport to the ship)

8)

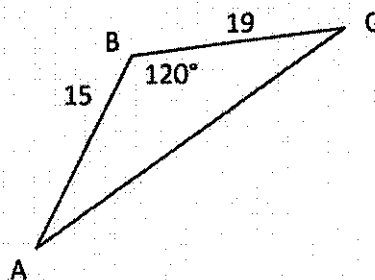
Find the angle of elevation of the sun when a 24 foot tree casts a shadow of 36 feet

Station 3 - Law of Sines and Law of Cosines

11. Find the missing dimensions of the triangle below. Round your answers to the nearest whole number.

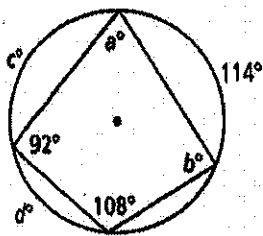


12. Find the ~~side AC~~ ^{AC} to the nearest ~~whole number~~ ^{tenth}.

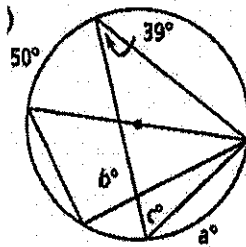


Station 4 - Solving Problems with Circles

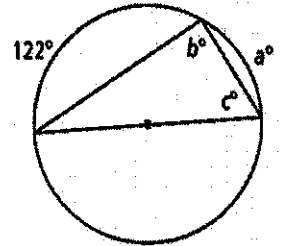
①



②



③



Station 5 – Circle Equations

1–6: Match the equation of a circle with its description.

1. $(x + 2)^2 + (y - 3)^2 = 4$

2. $(x - 2)^2 + (y - 5)^2 = 4$

3. $(x + 3)^2 + (y - 5)^2 = 16$

4. $(x + 2)^2 + (y + 3)^2 = 4$

5. $(x + 3)^2 + (y + 5)^2 = 16$

6. $(x - 2)^2 + (y + 5)^2 = 4$

A. center $(-3, 5)$, radius = 4

B. center $(-2, -3)$, radius = 2

C. center $(-2, 3)$, radius = 2

D. center $(2, -5)$, radius = 2

E. center $(-3, -5)$, radius = 4

F. center $(2, 5)$, radius = 2

7. Give the center and the radius of the circle whose equation is $(x - 3)^2 + (y + 5)^2 = 36$.

8. Write the standard equation of a circle with center $(-3, 6)$ and radius 7.

* CHALLENGE * 9. Write an equation for a circle with center $(7, 7)$ that passes through $(12, 9)$

Directions: Complete the square to identify the center and the radius.

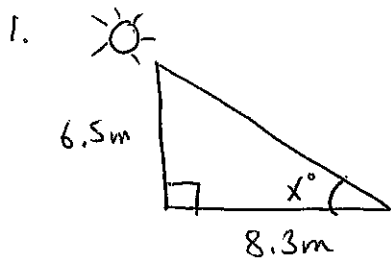
3.) $x^2 + y^2 + 4y = 12$

4.) $x^2 - 2x + y^2 = 80$

5.) $x^2 + 8x + y^2 - 2y = 64$

6.) $x^2 - 24x + y^2 + 6y = -137$

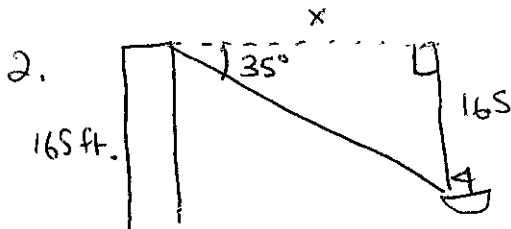
Topic 8 - Trigonometry ANSWER KEY



$$\tan x^\circ = \frac{6.5}{8.3}$$

$$\tan^{-1}(0.7831) = 38^\circ$$

$$\tan x = 0.7831$$

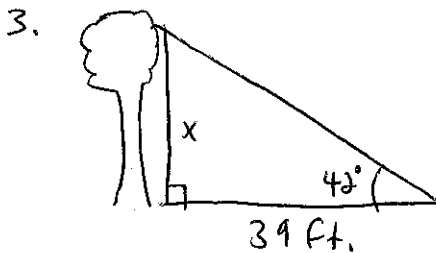


$$x \cdot \tan 35^\circ = \frac{165}{x} \cdot x$$

$$(\tan 35)x = 165$$

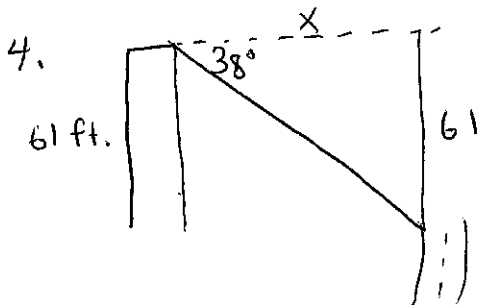
$$0.7002x = 165$$

$$x = 236 \text{ ft.}$$



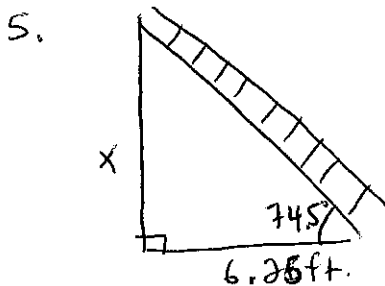
$$\tan 42 = \frac{x}{39}$$

$$x = 35.1 \text{ ft.}$$



$$\tan 38 = \frac{61}{x}$$

$$x = 78 \text{ ft.}$$



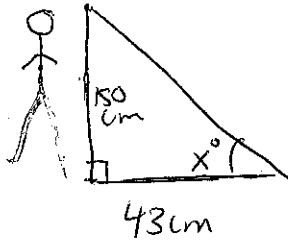
$$\tan 74.5 = \frac{x}{6.25}$$

$$x = 23 \text{ ft.}$$

Topic 8 - Trigonometry ANSWER KEY (page 2)



6.



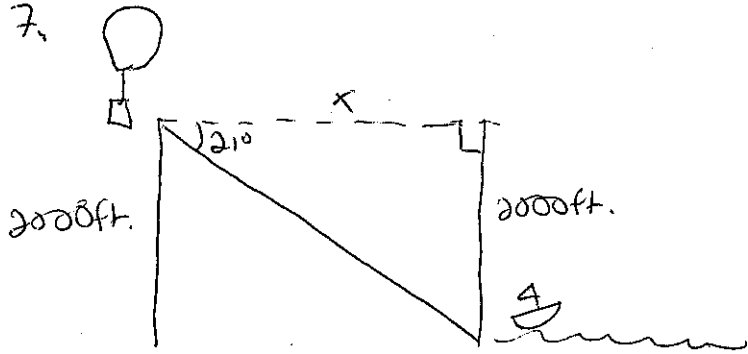
$$\tan x = \frac{150}{43}$$

$$\tan x = 3.4884$$

$$\tan^{-1}(3.4884)$$

$$x = 74^\circ$$

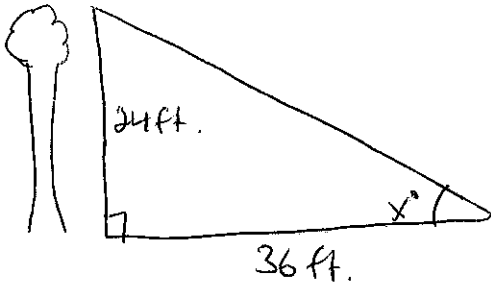
7.



$$\tan 21^\circ = \frac{2000}{x}$$

$$x = 5,210 \text{ ft.}$$

8.



$$\tan x = \frac{24}{36}$$

$$x = 34^\circ$$

Station 3 ANSWER KEY

11. $m\angle F = 22^\circ$

12. $AC = 29.5$

$ED = 8.76$

(Law of Sines)

Station 4 ANSWER KEY

1. $a = 72^\circ, b = 88^\circ, c = 102^\circ, d = 74^\circ$

2. $a = 78^\circ, b = 90^\circ, c = 65^\circ$

3. $a = 58^\circ, b = 90^\circ, c = 61^\circ$

Station 5 ANSWER KEY

1. C 2. F 3. A 4. B 5. E 6. D

7. center: $(3, -5)$
radius: 6

8. $(x+3)^2 + (y-6)^2 = 49$

9. $(x-7)^2 + (y-7)^2 = 29$

3. $x^2 + (y+2)^2 = 16$
center: $(0, -2), r = 4$

4. $(x-1)^2 + y^2 = 81$
center: $(1, 0), r = 9$

5. $(x+4)^2 + (y-1)^2 = 81$
center: $(-4, 1), r = 9$

6. $(x-12)^2 + (y+3)^2 = 16$
center: $(12, -3), r = 4$